REMARKS

I. Status of the Application

Claims 12-27 are pending in this application. In the December 18, 2009 Office Action, the Examiner:

A. Objected to the specification due to informalities;

B. Objected to the drawings because blocks in the drawings lacked descriptive labels;

C. Objected to claims 1 and 19 due to informalities;

D. Rejected claims 12-18 under 35 U.S.C. § 101 as being directed to non-statutory subject matter; and

E. Rejected claims 19-27 under 35 U.S.C §103(a) as being unpatentable over U.S. Patent No. 6,845,082 to Bourget et al. ("Bourget") in view of the NPL document by Henkel et al. ("Henkel").

In this response, Applicants have amended the specification, the drawings, and claims 12, 13, and 19. Applicants respectfully request reconsideration based on the foregoing amendments and following remarks.

II. Objections to the Specification

The specification was objected for referring to canceled claims 1 and 10. In this response, Applicants have amended the specification to remove the reference to claims 1 and 10. Accordingly, the objection to the specification is now moot.

III. Objections to the Drawings

The drawings were objected to for not having descriptive text labels for the blocks in Figs. 1-4. With this response, replacements drawing sheets are submitted in which descriptive text labels have been added to the blocks in Figs. 1-4. Accordingly, the objection to the drawings is now moot.

IV. Objection to Claims 1 and 19

Claims 1 and 19 were objected to for using the acronym IFFT without first introducing the full name. Claims 1 and 19 have been amended to recite "inverse Fourier transformation (IFFT)." Accordingly, the objection to claims 1 and 19 is now moot as well.

V. Rejections under 35 U.S.C § 101

Claims 12-18 were rejected for being directed to non-statutory subject matter for allegedly not reciting sufficient structure to tie the claim to a statutory class. In this response, Applicants have amended independent claim 12 to recite elements for performing the method steps. The elements incorporated into claim 12 correspond to the elements from claim 19 that perform similar functions, e.g., the first IFFT module, the first unit, the second unit, and the combining unit. Accordingly, it is respectfully submitted that claim 12, as amended, includes sufficient structure to tie the claim to a statutory class. Therefore, the rejection of claim 12 as being directed to non-statutory subject matter should be withdrawn.

Claims 13-18 were rejected as being directed to non-statutory subject matter due

to their dependence upon rejected claim 12 and for not reciting sufficient structure to tie the respective claim to a statutory class. Accordingly, because claim 12, as amended, is directed to statutory subject matter, claims 13-18 are also directed to statutory subject matter. Therefore, the rejection of claims 13-18 as being directed to non-statutory subject matter should be withdrawn as well.

VI. Rejections under 35 U.S.C. 103(a)

Claims 19-27 were rejected as being obvious over Bourget in view of Henkel. Claim 19 has been amended to recite that the circuit is for reducing a crest factor of a data symbol having "at least one carrier having at least some reserved data-carrying capacity not provided for data-transmission". As explained below, Bourget is not directed to a system that processes such signals, nor does Bourget disclose or suggest a first IFFT module, a first unit, a second unit, and a combining unit as claimed in claim 19.

In the Office Action, the Examiner cited Bourget as disclosing all of the limitations of claim 19 except a combination of rotated and scaled vectors according to a scaling and position of the peak values determined. To provide this limitation, the Examiner referred to Henkel. Bourget, however, is directed to a system and method for reducing peak-to-average power ratio (PAR) in multi-carrier systems like discrete multi-tone (DMT). As is common for DMT-transmission, the data symbol to be transmitted is a function of a plurality of signals provided within a predetermined time time-interval, each of the plurality of signals allocated to a carrier, and each carrier occupying at least one frequency from a transmit data spectrum. However, Bourget does not disclose that at

least some reserved data-carrying capacity of at least one carrier is not provided for data transmission.

Furthermore, Bourget does not disclose a first IFFT module in a second signal path configured to transform the data symbol to be transmitted into the time domain. The Examiner referred to modulator 104 of Bourget as corresponding to the first IFFT module of the second signal path of claim 19. However, the modulator 104 is not part of a signal path that is arranged in parallel with at least a portion of a transmit path. The modulator 104 is on a portion of a signal path that is not arranged in parallel to another signal path. Bourget does disclose an IFFT 410 in a signal path parallel with at least the portion of a transmit path, this IFFT 410 does not transform the data symbol X to be transmitted but a signal resulting from a combination of the symbol X with a complex waiting vector W representing the frequency and phase response for transmit filters 110 and 114 for each channel (see figure 4 and column 6/ lines 23-26).

The Examiner did refer to the IFFT 410 of Bourget as corresponding to the first unit of claim 19 configured to determine at least one peak value within a predetermined time interval of the transformed data signal. However, there is no disclosure in Bourget that the IFFT 410 determines at least one peak value within a predetermined time interval of the transformed data signal. Applicants would like to point out that peak values are generally not able to be determined with an IFFT. Therefore, we assume, that reference sign 410 is a clerical error. Nevertheless, Bourget does not disclose any unit in the second signal path determining peak values.

Moreover, Bourget does not disclose a combining device connected to an output of the second signal path and to the transmit path configured to superimpose the correction signal on the data symbol to be transmitted on the transmit signal path. Indeed, Bourget

discloses a combining device connected to the transmit path configured to superimpose a correction signal on the data symbol to be transmitted on the transmit signal path. However, the combining device of Bourget is not connected to the second signal path. According to the teaching of Bourget, the correction signal is generated by applying the stored amplitudes $\bar{A}_i$ and shifts $\overline{n}_i$ of the weighted kernel $\overline{k}(n)$ to the non-weighted kernel *k(n)*. This correction signal does not correspond to the output signal $\overline{y}(n)$ of the second signal path. Therefore, it would make no sense, to connect the combining device with an output of the second signal path.

The Examiner acknowledges that Bourget does not disclose a combination of rotated and scaled vectors according to a scaling and position of the peak value determined. However, the Examiner states, that Henkel discloses this feature and that it would have been obvious to one ordinary skill in the art at the time of the invention was made to apply a combination of rotated and scaled vectors according to a scaling and position of the peak values determined taught by Henkel into the system of Bourget since Henkel recited reducing peaks in the time domain by iterative subtraction of direct-like functions.

The cited document of Henkel corresponds to the patent application WO 03/026240 A2 discussed in the introductory part of the present application. As already mentioned on page 4, line 14 to page 5, line 6 of the specification, the method as described by Henkel is based on the existence, manipulation and iterative application of correction signals in the time domain. In contrast, the subject-matter of claim 19 refers to a circuit in which the crest factor reduction is performed in the frequency domain. Therefore, it would not be obvious to one of ordinary skill in the art to transfer any teaching of Henkel for the time domain to a system working in the frequency domain.

Based on the above, it is respectfully submitted that the combination of Bourget and Henkel as proposed by the Examiner fails to arrive at the invention of claim 19. Accordingly, it is respectfully submitted that the obviousness rejection of claim 19 over Bourget and Henkel should be withdrawn.

Claims 20-27 were also rejected as being obvious over Bourget and Henkel. Claims 20-27 each depend directly or indirectly from and incorporate all of the limitations of claim 19. None of the modifications of the combination of Bourget and Henkel proposed in connection with claims 20-27 cures the deficiencies of Bourget and Henkel with respect to claim 19. Accordingly, for at least the same reasons as claim 19, the rejections of claims 20-27 over Bourget and Henkel should be withdrawn as well.

VII. Claims 12-18

In the Office Action, method claims 12-18 were only rejected as being directed to non-statutory subject matter. As mentioned, claims 12-18 have been amended to include limitations that tie the claims to a statutory class. In addition, claim 12 has been amended to correspond to apparatus claim 19 by reciting, for example, that the method steps are performed by a first IFFT module, a first unit, and a second unit of a second signal path that receives the data symbol in parallel to a first signal path, and a combining device that receives the data symbol from the first signal path and the correction signal from the second signal path. As discussed above in regard to claim 19, the combination of Bourget and Henkel does not arrive at a system or method that includes such limitations. Accordingly, it respectfully submitted that for at least the same reasons as given above for claims 19-27, claims 12-18, as amended, are patentable over the prior art.

VIII. Conclusion

For all the foregoing reasons, it is respectfully submitted that the applicants have made a patentable contribution to the art. Favorable reconsideration and allowance of the application is therefore earnestly solicited.

In the event Applicants have inadvertently overlooked the need for an extension of time or payment of an additional fee, Applicants conditionally petitions therefore, and authorizes any fee deficiency to be charged to deposit account 13-0014.

Respectfully submitted,

/David R. Moorman/
Attorney for Applicants
Registration No. 59323
Maginot Moore & Beck
Chase Tower
111 Monument Circle, Suite 3250
Indianapolis, Indiana 46204-5109
Telephone: (317) 638-2922